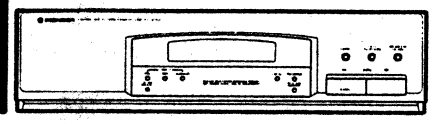
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2690

FM/AM STEREO SYNTHESIZER TUNER

F-J210
F-J210L

F – J210 AND F – J210L HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	F – J210	F – J210L		
ZEWZIX1K	○	–	DC power supplied from other system component.	
ZEBX1K	○	○		
ZEWZI	○	–		
ZEB	○	○		
ZDL	○	–		

- **This manual is applicable to the following: F – J210/ZEWZIX1K, ZEWZI, ZEBX1K, ZEB and ZDL; F – J210L/ZEBX1K and ZEB.**
- **For the following: F – J210/ZEWZI, ZEBX1K, ZEB and ZDL; F – J210L/ZEBX1K and ZEB, refer to page 22.**
- **F – J210L covers MW/LW bands while F – J210 covers MW.**
- **These products are systems components.**
  Each of these products does not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.
  These products' instructions are contained within the instruction manual of the related system component(s). The manual is packed with those component(s).

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1. EXPLODED VIEWS, PACKING AND PARTS LIST

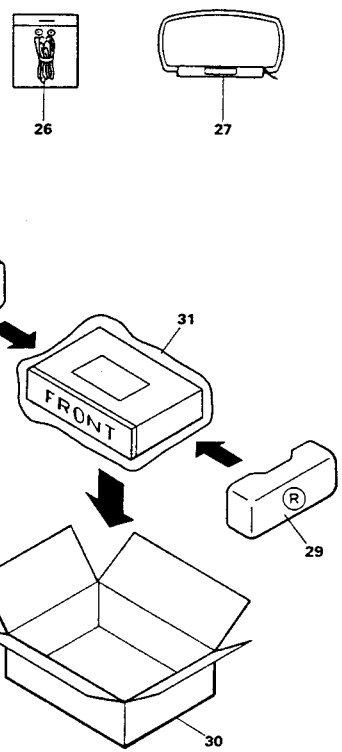
NOTES:

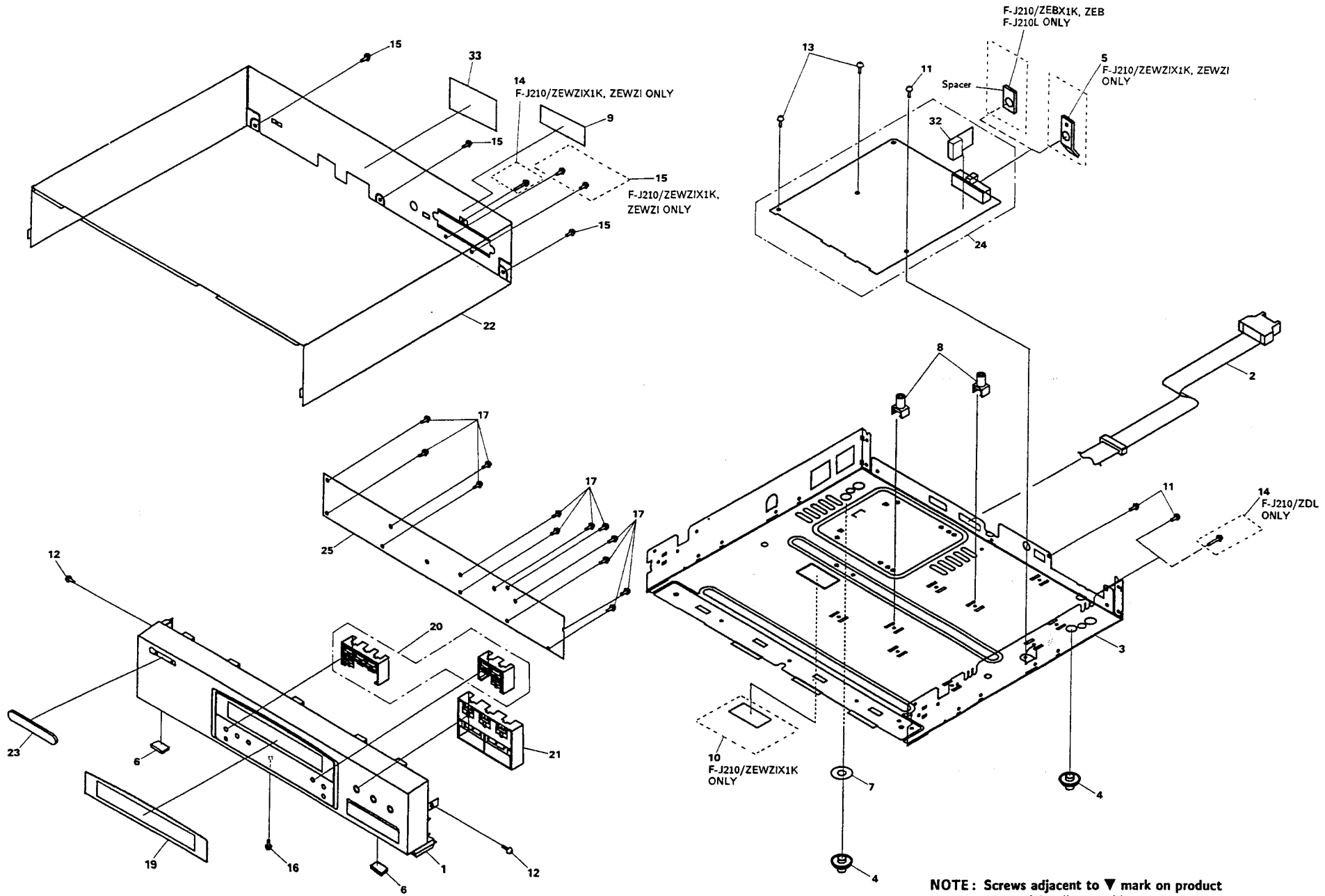
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

• Parts List

Mark	No.	Description	Parts No.
	1	FRONT PANEL	AMB2100
	2	J CORD WITH PLUG	ADE1102
NSP	3	CHASSIS	ANA1176
	4	CABINET BUMPER	AEC−784
NSP	5	EARTH PLATE	ANK1247
	6	RUBBER SHEET	AEB1111
	7	WASHER	AED1112
NSP	8	PCB MOULD	AMR1525
NSP	9	ANTENNA LABEL	AAX1670
NSP	10	T.LABEL	AAX1690
	11	SCREW	ABA−298
	12	SCREW (STEEL)	ABA1011
	13	SCREW	ABA1018
	14	SCREW (STEEL)	ABA1047
	15	SCREW	BBZ30P060FZK
	16	SCREW	BBZ30P080FZK
	17	SCREW	BPZ26P080FMC
	18	.....	
	19	DECORATION PANEL	AAK2407
	20	PROGRAM BUTTON	AAD2388
	21	TUNING BUTTON	AAD2389
	22	BONNET	ANE1424
	23	NAME PLATE(PLASTIC)	AAM1047
◉	24	MAIN ASSEMBLY	AWZ4959
◉	25	DISPLAY ASSEMBLY	AWZ4960
	26	FM ANTENNA	ADH1002
	27	LOOP ANTENNA	ATB1006
	28	SIDE PAD(L)	AHA1573
	29	SIDE PAD(R)	AHA1574
	30	PACKING CASE	AHD2459
	31	SHEET	AHG1153
	32	4 SERIAL F.E. MODULE ASSY	AXQ1004
NSP	33	NAME LABEL	AAL2000

• PACKING





NOTE: Screws adjacent to ▼ mark on product are used for disassembly.

2. SCHEMATIC AND PCB CONNECTION DIAGRAMS

Note: (Type 3)

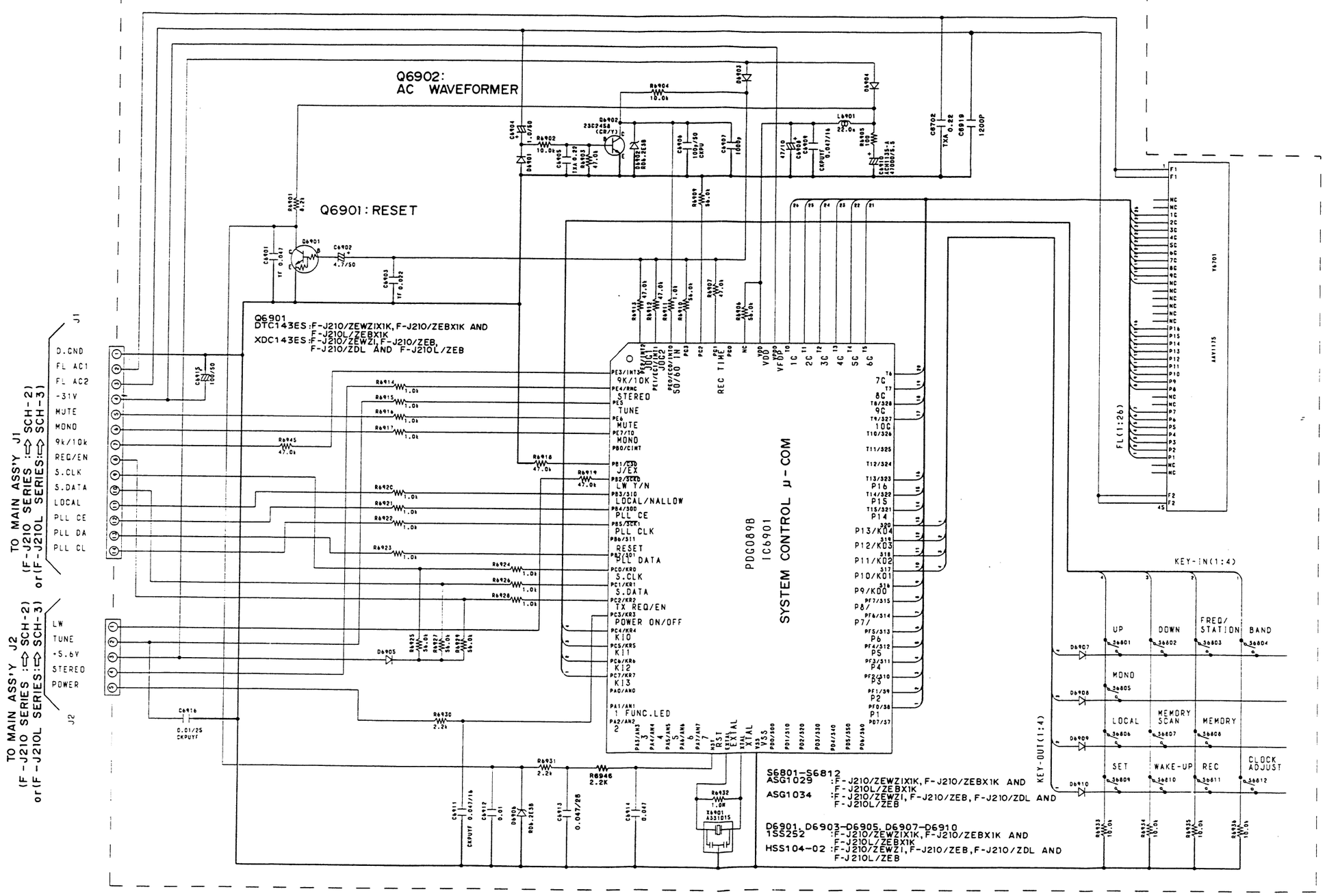
1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   mV : Signal voltage at FM 1kHz, 100% MOD.
   : DC voltage (V) at no input signal unless otherwise noted.
   Value in ( ) is DC voltage at rated power.
   ⇦ mA or — mA : DC current at no input signal unless otherwise noted.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⊘ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):

   DISPLAY ASSEMBLY
   S6801 : UP (+) ┐
   S6802 : DOWN (–) ┘ TUNING
   S6803 : FREQ./STATION
   S6804 : BAND
   S6805 : FM MONO
   S6806 : LOCAL
   S6807 : MEMORY SCAN
   S6808 : STATION MEMORY
   S6809 : SET
   S6810 : WAKE – UP ┐
   S6811 : REC ┘ TIMER
   S6812 : CLOCK ADJUST

9. For SCH – □ on the schematic diagram
   SCH – □ indicates the drawing number of the schematic diagram.
   (SCH stands for schematic diagram.)

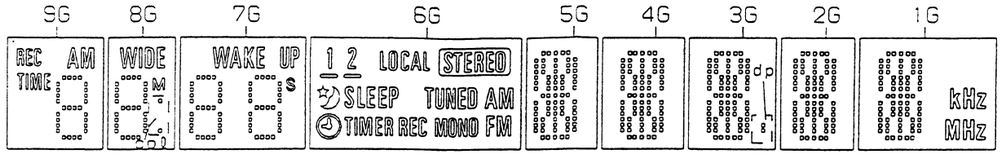
2.1 DISPLAY ASSEMBLY

DISPLAY ASS'Y (AWZ4960 : F-J210/ZEWZIX1K, F-J210/ZEBX1K AND F-J210L/ZEBX1K)
(AWZ4717 : F-J210/ZEWZI, F-J210/ZEB, F-J210/ZDL AND F-J210L/ZEB)



SCH-1 DISPLAY ASS'Y

● FL Tube (V 6701)

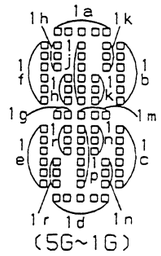


PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CONNECTION	F1	F1	NP	NP	NC	NC	1G	2G	3G	4G	5G	6G	7G	8G	9G	NC	NC	NC	NC	NC	NC	P16	P15

PIN NO.	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
CONNECTION	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NC	NC	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7

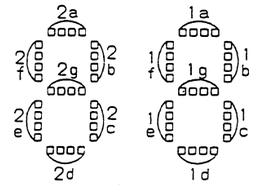
NOTE 1) F1,F2 --- Filament
2) NP ------ No pin
3) NC ------ No connection
4) DL ------ Datum Line
5) 1G~9G --- Grid



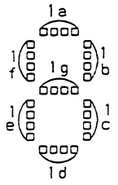
(5G~1G)

ANODE CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	1a	1a	1a	-	1a	1a	1a	1a	1a
P2	1b	1b	1b	(1) —	1b	1b	1b	1b	1b
P3	1c	1c	1c	(2) —	1c	1c	1c	1c	1c
P4	1d	1d	1d	LOCAL	1d	1d	1d	1d	1d
P5	1e	1e	1e	STEREO	1e	1e	1e	1e	1e
P6	1f	1f	1f	SLEEP	1f	1f	1f	1f	1f
P7	1g	1g	1g	TIMER	1g	1g	1g	1g	1g
P8	TIME	WIDE	S	REC	1h	1h	1h	1h	1h
P9	AM	M	2a	TUNED	1j	1j	1j	1j	1j
P10	-	(col)	2b	MONO	1k	1k	1k	1k	1k
P11	REC	-	2c	AM	1m	1m	1m	1m	1m
P12	-	-	2d	FM	1n	1n	1n	1n	1n
P13	-	-	2e	-	1p	1p	1p	1p	1p
P14	-	-	2f	-	1r	1r	1r	1r	1r
P15	-	-	2g	-	-	-	(dp)	-	kHz
P16	-	-	WAKE UP	1 2	-	-	-	-	MHz



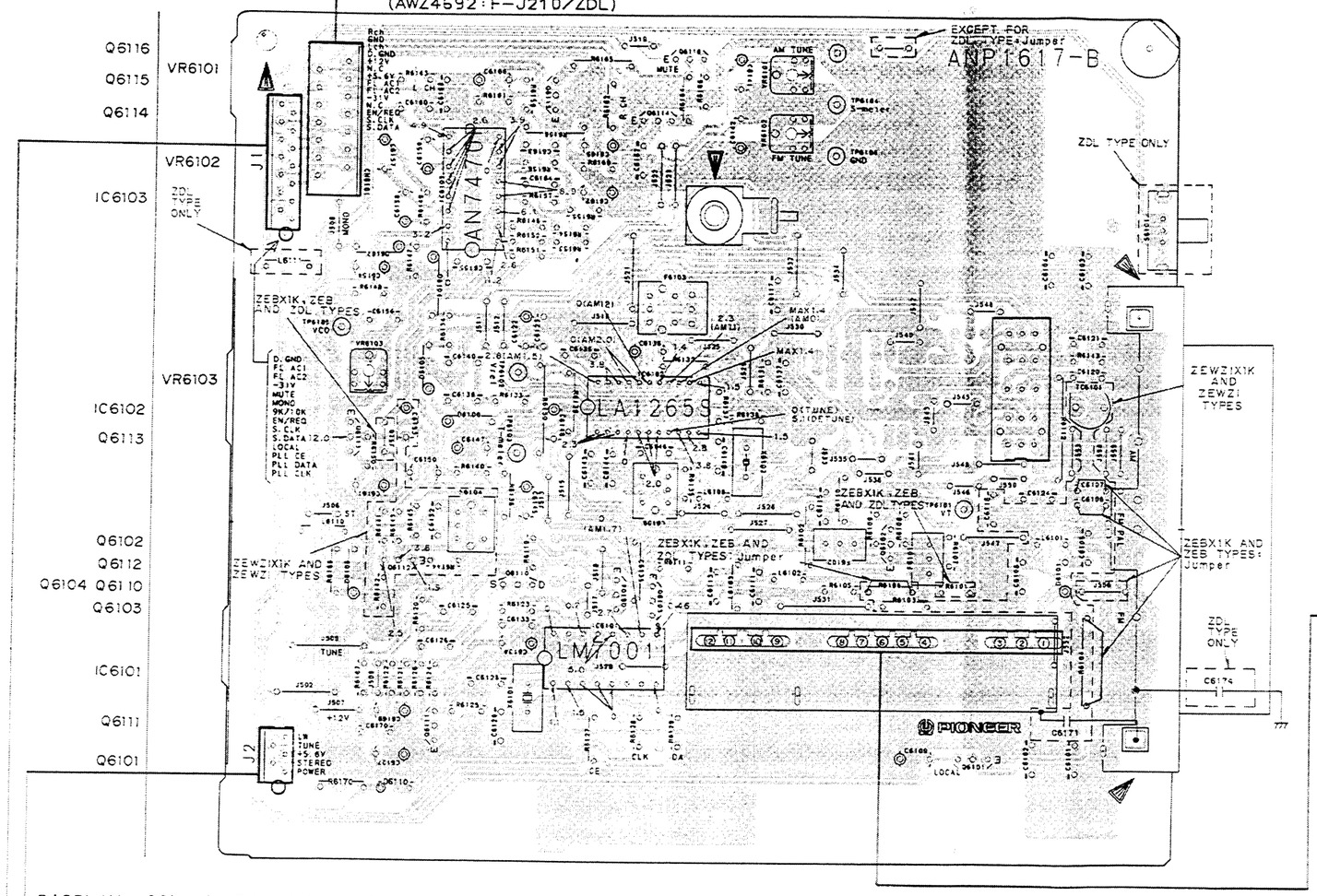
(7G)



(9G, 8G)

DISPLAY ASS'Y **SCH-1**

MAIN ASS'Y (AWZ4959 : F-J210/ZEWZIX1K)
(AWZ4691 : F-J210/ZEWZI)
(AWZ4957 : F-J210/ZEBX1K)
(AWZ4689 : F-J210/ZEB)
(AWZ4692 : F-J210/ZDL)



NOTE

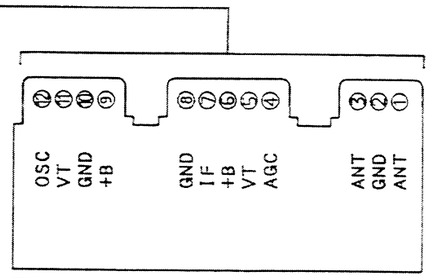
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E C B	E C B or E C B	Transistor
Q215 C B E	E C B or E C B	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C516		Capacitor (Non-polarity)

Others

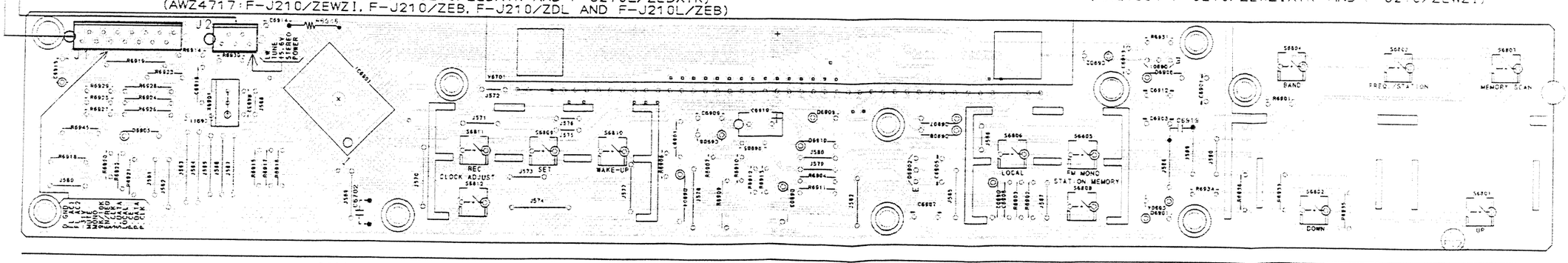
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊖ (double circles) shows negative terminal.
4. The diode terminal marked with ⊖ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.



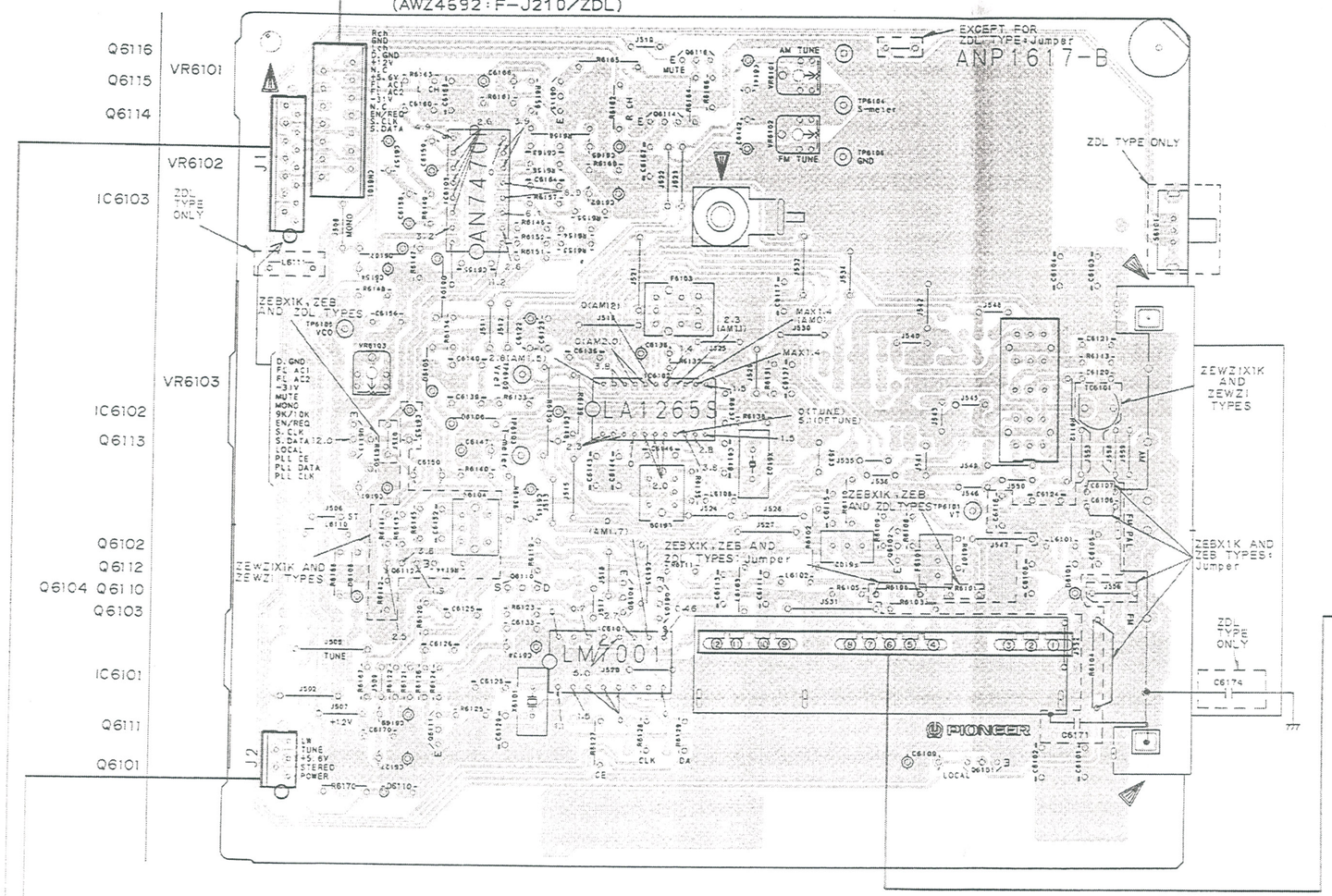
FE MODULE ASS'Y
(AXQ1002 : F-J210/ZEBX1K, F-J210/ZEB AND F-J210/ZDL)
(AXQ1004 : F-J210/ZEWZIX1K AND F-J210/ZEWZI)

DISPLAY ASS'Y (AWZ4960 : F-J210/ZEWZIX1K, F-J210/ZEBX1K AND F-J210L/ZEBX1K)
(AWZ4717 : F-J210/ZEWZI, F-J210/ZEB, F-J210/ZDL AND F-J210L/ZEB)



IC6901 Q6902 Q6901

MAIN ASS'Y (AWZ4959 : F-J210/ZEWZIX1K)
(AWZ4691 : F-J210/ZEWZI)
(AWZ4957 : F-J210/ZEBX1K)
(AWZ4689 : F-J210/ZEB)
(AWZ4692 : F-J210/ZDL)



NOTE

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P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
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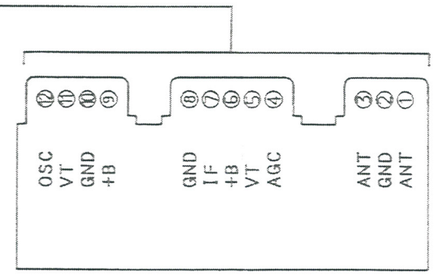
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C516		Capacitor (Non-polarity)

Others

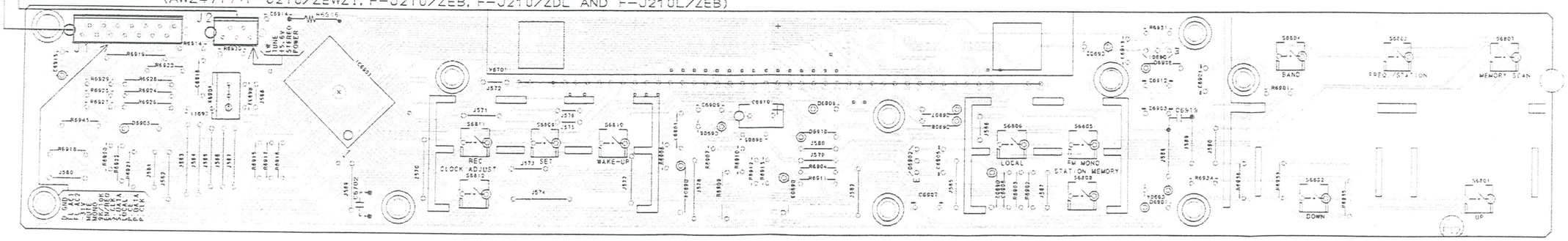
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

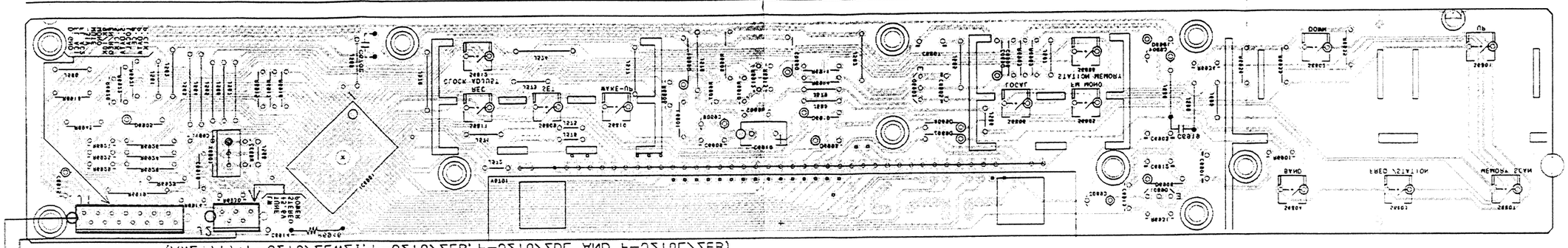
3. The capacitor terminal marked with ⊖ (double circles) shows negative terminal.
4. The diode terminal marked with ⊖ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.



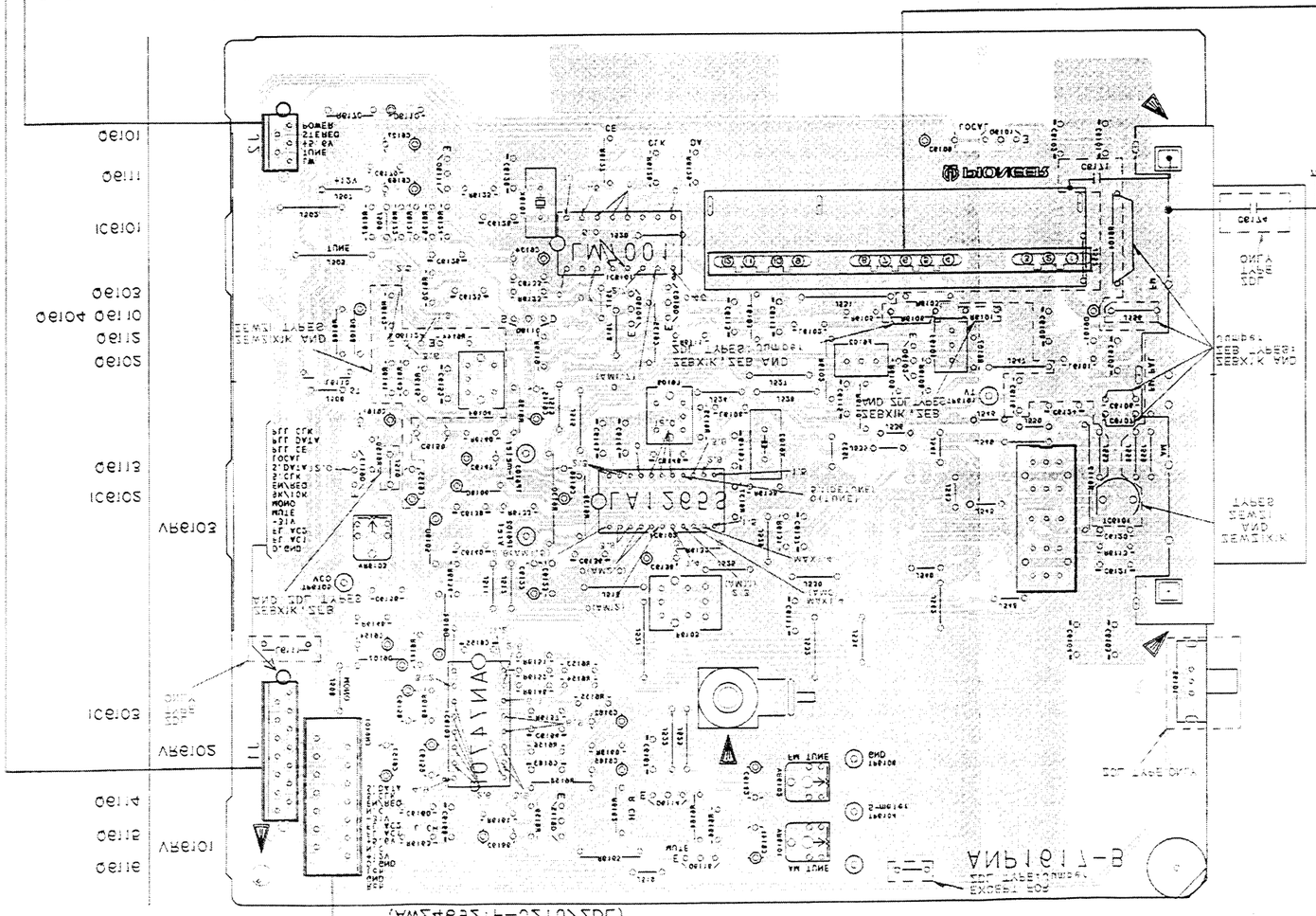
FE MODULE ASS'Y
(AXQ1002 : F-J210/ZEBX1K, F-J210/ZEB AND F-J210/ZDL)
(AXQ1004 : F-J210/ZEWZIX1K AND F-J210/ZEWZI)

DISPLAY ASS'Y (AWZ4960 : F-J210/ZEWZIX1K, F-J210/ZEBX1K AND F-J210L/ZEBX1K)
(AWZ4717 : F-J210/ZEWZI, F-J210/ZEB, F-J210/ZDL AND F-J210L/ZEB)





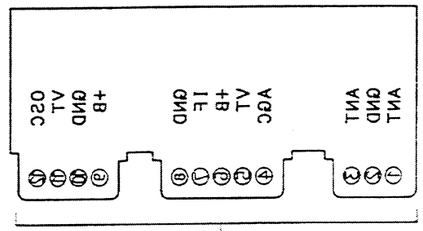
DISPLAY ASS'Y (AWZ4699 : E-7SJ0\ZEMZ1XJK, E-7SJ0\ZEBXJK AND E-7SJ0\ZEBXJK)
(AWZ4777 : E-7SJ0\ZEMZ1, E-7SJ0\ZEB, E-7SJ0\ZDL AND E-7SJ0L\ZEB)



MAIN ASS'Y (AWZ4699 : E-7SJ0\ZEMZ1XJK)
(AWZ4777 : E-7SJ0\ZEMZ1)
(AWZ4689 : E-7SJ0\ZEBXJK)
(AWZ4689 : E-7SJ0\ZEB)
(AWZ4689 : E-7SJ0\ZDL)

TO DECK - PWB

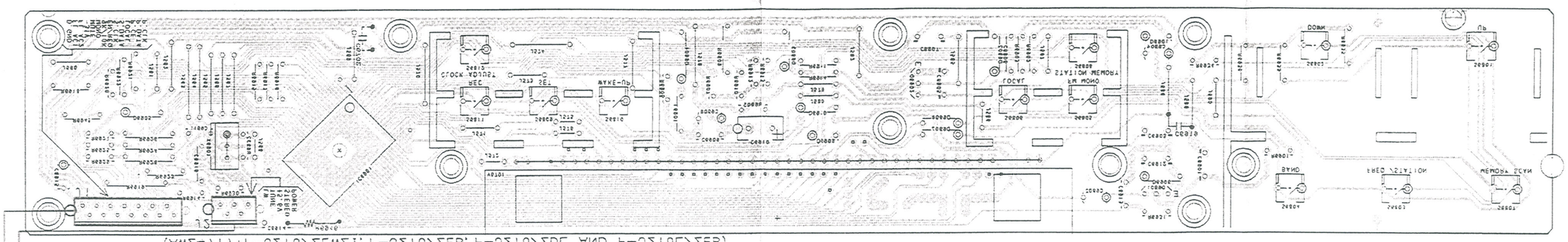
EE MODULE ASS'Y
(AXCJ004 : E-7SJ0\ZEMZ1XJK AND E-7SJ0\ZEMZ1)
(AXCJ005 : E-7SJ0\ZEBXJK, E-7SJ0\ZEB AND E-7SJ0\ZDL)



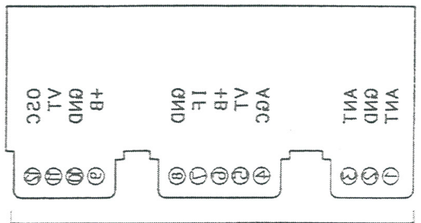
This P.C.B. connection diagram is viewed from the foil side.

E-7SJ0, E-7SJ0L

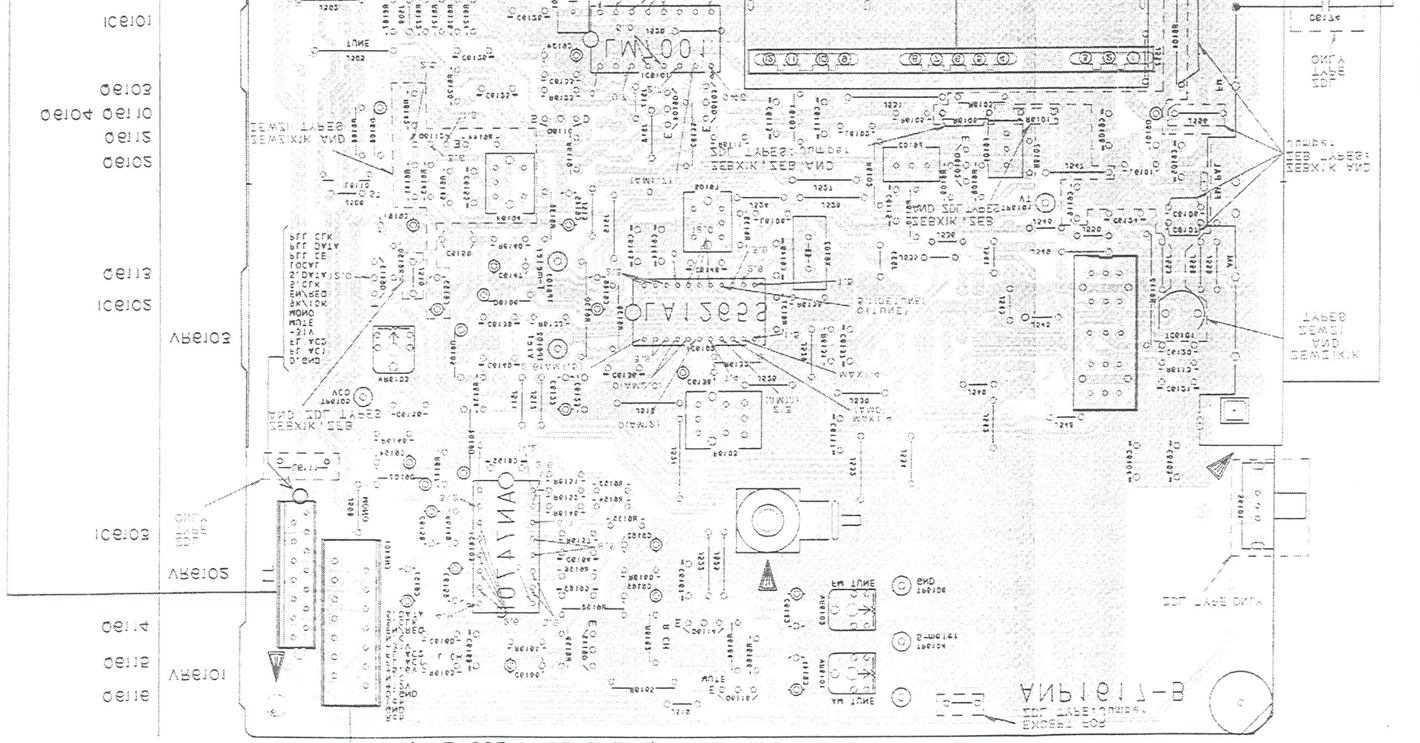
DISPLAY ASS'Y (AWZ4777 : F-7510\ZEM2I, F-7510\ZEB, F-7510\ZDL AND F-7510T\ZEB)
(AWZ4698 : F-7510\ZEM2IXJK, F-7510\ZEBXJK AND F-7510T\ZEBXJK)



EE MODULE ASS'Y
(AXQJ004 : F-7510\ZEM2IXJK AND F-7510\ZEM2I)
(AXQJ005 : F-7510\ZEBXJK, F-7510\ZEB AND F-7510\ZDL)



MAIN ASS'Y (AWZ4698 : F-7510\ZEM2IXJK)
(AWZ4777 : F-7510\ZEM2I)
(AWZ4698 : F-7510\ZEBXJK)
(AWZ4698 : F-7510\ZEB)
(AWZ4698 : F-7510\ZDL)



TO DECK ASS'Y

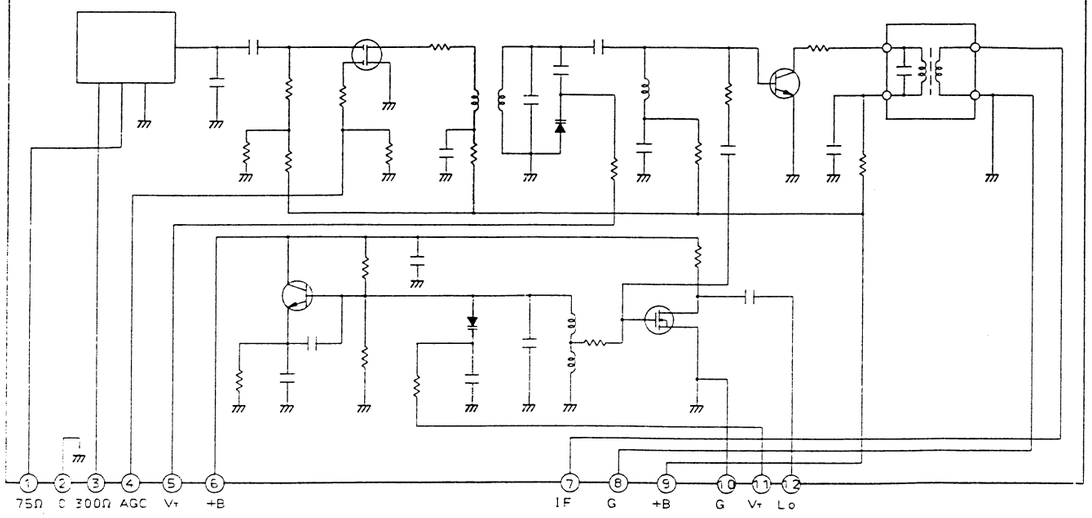
This P.C.B. connection diagram is viewed from the foil side.

1 2 3 4 5 6 7

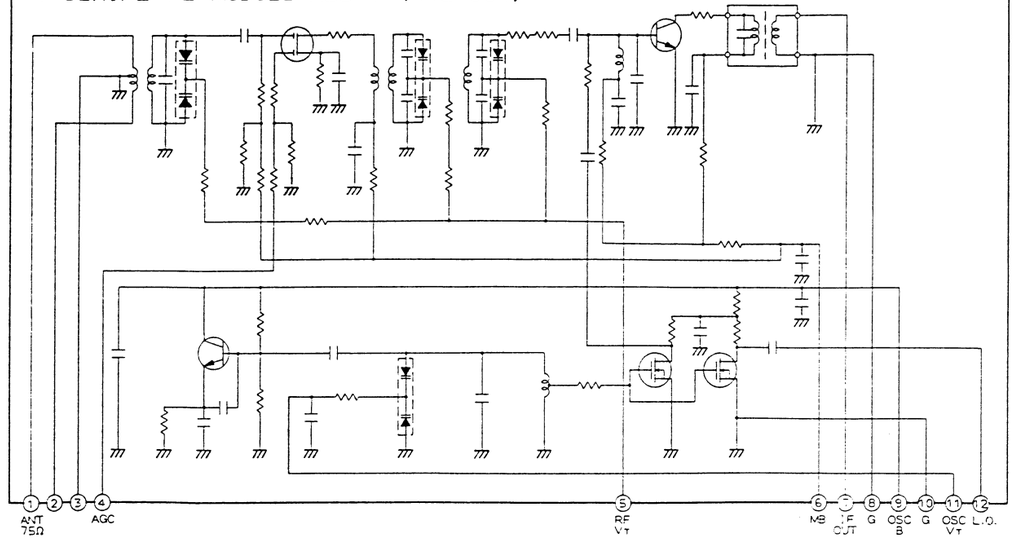
A

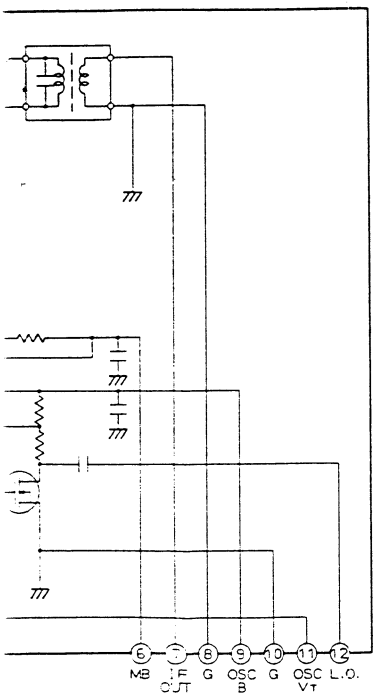
B

2 SERIAL FE MODULE ASSY (AXQ1002)

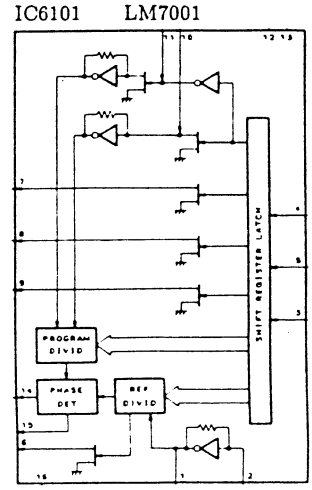


4 SERIAL FE MODULE ASS'Y (AXQ1004)





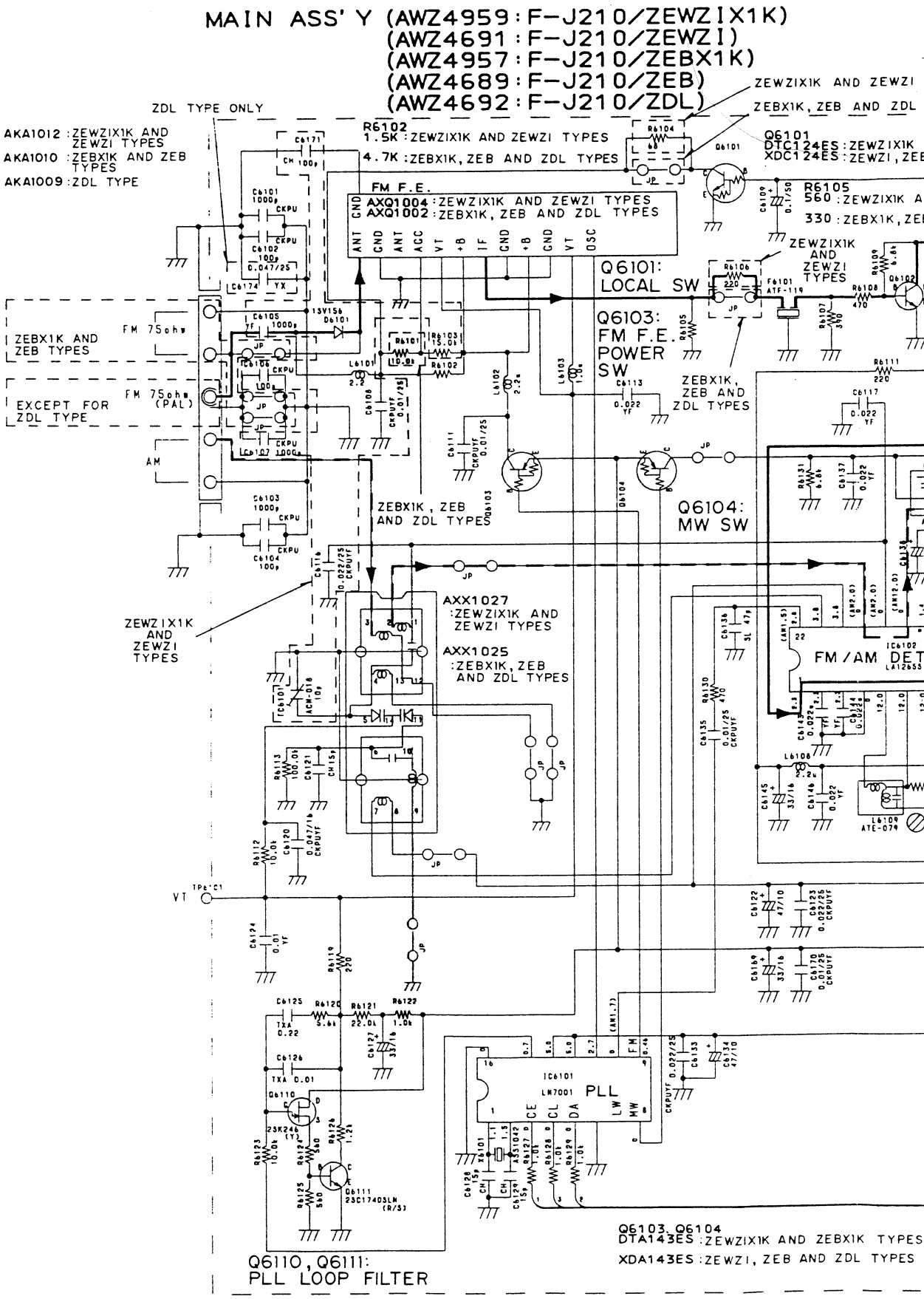
IC6101 LM7001



IC6101 LM7001

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	1.1	9	0.46
2	1.5	10	0 (AM : 1.7)
3	0	11	2.7
4	0	12	5.0
5	0	13	5.0
6	—	14	0.7
7	—	15	—
8	0	16	0

2.2 MAIN ASSEMBLY


MAIN ASS' Y (AWZ4959 : F-J210/ZEWZIX1K)
(AWZ4691 : F-J210/ZEWZI)
(AWZ4957 : F-J210/ZEBX1K)
(AWZ4689 : F-J210/ZEB)
(AWZ4692 : F-J210/ZDL)
ZDL TYPE ONLY
AKA1012 : ZEWZIX1K AND ZEWZI TYPES
AKA1010 : ZEBX1K AND ZEB TYPES
AKA1009 : ZDL TYPE
R6102
1.5K : ZEWZIX1K AND ZEWZI TYPES
4.7K : ZEBX1K, ZEB AND ZDL TYPES
ZEWZIX1K AND ZEWZI
ZEBX1K, ZEB AND ZDL
Q6101
DTC124ES : ZEWZIX1K
XDC124ES : ZEWZI, ZEB
FM F.E.
AXQ1004 : ZEWZIX1K AND ZEWZI TYPES
AXQ1002 : ZEBX1K, ZEB AND ZDL TYPES
GND ANT GND ANT ACC VT +B IF GND +B GND VT OSC
R6105
560 : ZEWZIX1K A
330 : ZEBX1K, ZEB
Q6101: LOCAL SW
ZEWZIX1K AND ZEWZI TYPES
ZEBX1K AND ZEB TYPES
FM 75ohm
EXCEPT FOR ZDL TYPE
FM 75ohm (PAL)
AM
Q6103: FM F.E. POWER SW
ZEBX1K, ZEB AND ZDL TYPES
ZEBX1K, ZEB AND ZDL TYPES
Q6104: MW SW
ZEWZIX1K AND ZEWZI TYPES
AXX1027 : ZEWZIX1K AND ZEWZI TYPES
AXX1025 : ZEBX1K, ZEB AND ZDL TYPES
FM/AM DET
IC6101
LM7001 PLL
CE CL DA LW MW
Q6110, Q6111: PLL LOOP FILTER
Q6103, Q6104
DTA143ES : ZEWZIX1K AND ZEBX1K TYPES
XDA143ES : ZEWZI, ZEB AND ZDL TYPES

SCH-2 MAIN ASS'Y

ZIX1K AND ZEWZI TYPES

K1K, ZEB AND ZDL TYPES

101
C124ES:ZEWZIX1K AND ZEBX1K TYPES
C124ES:ZEWZI, ZEB AND ZDL TYPES

R6105
560:ZEWZIX1K AND ZEWZI TYPES
330:ZEBX1K, ZEB AND ZDL TYPES

ZEWZIX1K AND ZEWZI TYPES

Q6102: IF AMP

———:FM ROUTE
- - - -:AM ROUTE

S-METER

VCO

GND

C6163, C6164
1000P:ZEWZIX1K AND ZEWZI TYPES
1200P:ZEBX1K, ZEB AND ZDL TYPES

C6167, C6168
3900P:ZEWZIX1K AND ZEWZI TYPES
2700P:ZEBX1K AND ZEB TYPES
5600P:ZDL TYPE

ZDL TYPE ONLY

EXCEPT FOR ZDL TYPE

FM/AM DETECTOR

ZEWZIX1K AND ZEWZI TYPES

MPX

Q6112:AMP

Q6113: RIPPLE FILTER

ZEBX1K, ZEB AND ZDL TYPES

R6160, R6161
6.8K:ZEWZIX1K AND ZEWZI TYPES
2.4K:ZEBX1K, ZEB AND ZDL TYPES

Q6114, Q6115:MUTE

Q6116:BUFFER

POWER(1:3)

SYSTEM(1:3)

PLL(1:3)

D6104–D6108
1SS252 :ZEWZIX1K AND ZEBX1K TYPES
HSS104-02 :ZEWZI, ZEB AND ZDL TYPES

VREF

T-METER

J1: D.GND, FL AC1, FL AC2, -31V, MUTE, MONO, 9K/10K, EN/REQ, S.CLK, S.DATA, LOCAL, PLL CE, PLL DATA, PLL CLK

TO DISPLAY ASS'Y J1 (⇨ SCH-1)

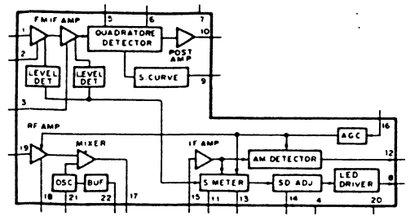
J2: LW, TUNE, +5.6V, STEREO, POWER

TO DISPLAY ASS'Y J2 (⇨ SCH-1)

CN6101: Rch, GND, Lch, D.GND, +12V, N.C, +5.6V, FL AC1, FL AC2, -31V, N.C, EN/REQ, S.CLK, S.DATA

TO DECK-AMP

IC6102 LA1265S

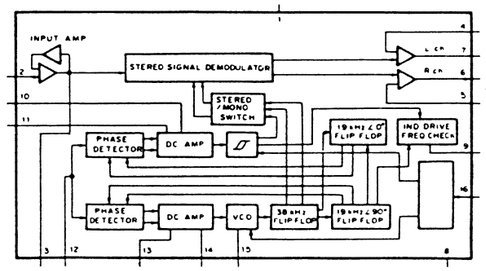


IC6102 LA1265S

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	2.3	10	2.8	17	0
2	2.3	11	1.5		12.0(AM)
3	2.3	12	1.5	18	0
4	0	13	1.4(MAX)		2.0(AM)
5	12.0	14	1.4(MAX)	19	0
6	12.0		0(AM)		2.0(AM)
7	12.0	15	2.3	20	3.8
8	0(T)		1.1(AM)	21	3.8
	5.1(D)	16	1.4	22	2.8
9	3.8				1.5(AM)

Note: (T) TUNE IND. ON
(D) TUNE IND. OFF

IC6103 AN7470P



IC6103 AN7470P

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	11.2	9	4.9	15	3.2
2	2.6		0.6	16	0
3	6.1		(STEREO)		11.4
4	8.9	10	2.6		(AM)
5	8.9	11	2.6		4.0
6	3.9	12	2.6		(MONO)
7	3.9	13	2.6		
8	0	14	2.6		

MAIN ASS'Y **SCH-2**

4 5 6 7 8 9

3. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω → 56 × 10¹ → 561 ..... RD1/8PM[5][6][1]J

47kΩ → 47 × 10³ → 473 ..... RD1/4PS[4][7][3]J

0.5Ω → 0R5 ..... RN2H[0][R][5]K

1Ω → 010 ..... RS1P[0][1][0]K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ→ 562 × 10¹ →5621 ..... RN1/4PC[5][6][2][1]F

Mark	No.	Description	Parts No.
LIST OF ASSEMBLIES			
◉		MAIN ASSEMBLY	AWZ4959
◉		DISPLAY ASSEMBLY	AWZ4960
MAIN ASSEMBLY			
SEMICONDUCTORS			
	IC6103		AN7470P
	IC6102		LA1265S
	IC6101		LM7001
	Q6116		2SA1048
	Q6111		2SC1740SLN
	Q6112−Q6115		2SC2458
	Q6102		2SC2668
	Q6110		2SK246
	Q6103,Q6104		DTA143ES
	Q6101		DTC124ES
	D6104−D6108		1SS252
	D6101		1SV156
	D6110		RD5.1ESB
COILS, FILTERS			
	L6109		ATE−079
	L6103		LAU010K
	L6101,L6102,L6108,L6110		LAU2R2K
	F6102		ATF−107
	F6101		ATF−119
	F6103		ATF1042
	F6104		ATF1088
CAPACITORS			
	C6156	(470P, 50V(DC))	ACE1039
	C6171		CCDCH101J50
	C6121,C6128,C6129		CCDCH150J50
	C6149		CCDSL271J50
	C6136		CCDSL470J50
	C6150		CEANP2R2M50
	C6148		CEAS010M50
	C6109,C6147,C6154		CEAS0R1M50
	C6161		CEAS100M50
	C6158		CEAS1R5M50
	C6142,C6153,C6165,C6166		CEAS2R2M50
	C6127,C6145,C6169		CEAS330M16
	C6157		CEAS3R3M50
	C6122,C6134,C6141,C6162		CEAS470M10
	C6138		CEAS4R7M50
	C6159		CEASR22M50
	C6126		CFTXA103J50
	C6125		CFTXA224J50
	C6163,C6164		CKDYB102K50
	C6152		CKDYB122K50
	C6139		CKDYB222K50
	C6167,C6168		CKDYB392K50
	C6105		CKDYF102Z50
	C6124		CKDYF103Z50
	C6113,C6115,C6117,C6137, C6143,C6144,C6146		CKDYF223Z50
	C6140,C6155		CKDYF473Z50
	C6102,C6104,C6106		CKPUYB101K50
	C6101,C6103,C6107		CKPUYB102K50
	C6108,C6111,C6135,C6170		CKPUYF103Z25
	C6116,C6123,C6133,C6160		CKPUYF223Z25
	C6120		CKPUYF473Z16
RESISTORS			
	VR6103	(4.7K, 0.1W)	ACP1042
	VR6101	(10K, 0.1W)	ACP1043
	VR6102	(22K, 0.1W)	ACP1044
		Other Resistors	RD1/8PM□□□J
OTHERS			
		AM RF TUNING BLOCK	AXX1027
		TERMINAL (PAL 2P)	AKA1012
	CN6101	CONNECTOR(14P)	KPE14
	TC6101	CERAMIC TRIMMER	ACM−018
	X6101	CRYSTAL RESONATOR (7.200MHz)	ASS1042
	X6102	CERAMIC RESONATOR	ATF1027

Mark	No.	Description	Parts No.
DISPLAY ASSEMBLY			
SEMICONDUCTORS			
	IC6901		PDG089B
	Q6902		2SC2458
	Q6901		DTC143ES
	D6901,D6903−D6905,D6907−D6910		1SS252
	D6902,D6906		RD6.2ESB
SWITCHES			
	S6801−S6812		ASG1029
COILS, FILTERS			
	L6901		LAU220K
CAPACITORS			
	C6910		ACH1135
	C6904		CEAS010M50
	C6915		CEAS101M50
	C6908		CEAS470M10
	C6902		CEAS4R7M50
	C6702,C6905		CFTXA224J50
	C6907		CKDYB102K50
	C6912		CKDYB103K50
	C6919		CKDYB122K50
	C6903		CKDYF223Z50
	C6901,C6914		CKDYF473Z50
	C6913		CKDYX473M25
	C6906		CKPUYB101K50
	C6916		CKPUYF103Z25
	C6909,C6911		CKPUYF473Z16
RESISTORS			
		All Resistors	RD1/8PM□□□J
OTHERS			
		4 SERIAL F.E. MODULE ASSY	AXQ1004
	V6701	FL TUBE	AAV1175
	X6901	CRYSTAL RESONATOR (8.00MHz)	ASS1015

Note : 4 serial F.E. module assy has no service part.

4. ADJUSTMENTS

4.1 ADJUSTMENT OF THE FM TUNER SECTION

- Set the mode selector to FM BAND.
- Connect the wiring as shown in Fig. 4−1.

Step No.	Adjustment Title	FM SG(1kHz, ±75kHz dev.)		Reception Frequency Display	Adjustment	
		Frequency(MHz)	Level(dBμV)		Adjustment Location	Specifications
1	Center adjustment	98	80	98.0MHz	L6109	Adjust so that the DC voltage between the TP6102(Vref) and TP6103(T-meter) becomes 0V ±50mV.
2	VCO adjustment	Non modulation	80	98.0MHz	VR6103	Adjust so that the output of the TP6105 (VCO) becomes 76kHz ±0.5kHz.
3	TUNED IND. Lighting level	98	18 (± 3dB)	98.0MHz	VR6102	Adjust so that the indicators of TUNED IND. start to light up.

4.2 ADJUSTMENT OF MW TUNER SECTION

- Set the mode selector to AM(MW) BAND.
- Connect the wiring as shown in Fig. 4−1.
- ZDL type only : Position the channel step switch on the rear panel to the 9kHz position.

Step No.	Adjustment Title	AM SG(400Hz, 30% Mod.)		Reception Frequency Display	Adjustment	
		Frequency(kHz)	Level(dBμV/m)		Adjustment Location	Specifications
1	Tracking adjustment*2	603	Low input	603kHz	AM RF Tuning block antenna coil	Adjust so that the DC voltage between the TP6104 (S-meter) and GND becomes at maximum level.
		1395		1395kHz	TC6101	
2	IFT adjustment*2	603		603kHz	F6103	
3	TUNED IND. Lighting level	999*1	55 (±5 dB)	999kHz*1	VR6101	Adjust so that the indicators of TUNED IND. start to light up.

Note 1 :
For the area using 10kHz step (ZDL type : 10kHz), frequencies should be as follows :
**1 : 1000 kHz*

Note 2 :
*Adjustment marked with " *2 " is only for F−J210/ZEWZIX1K and ZEWZI.*

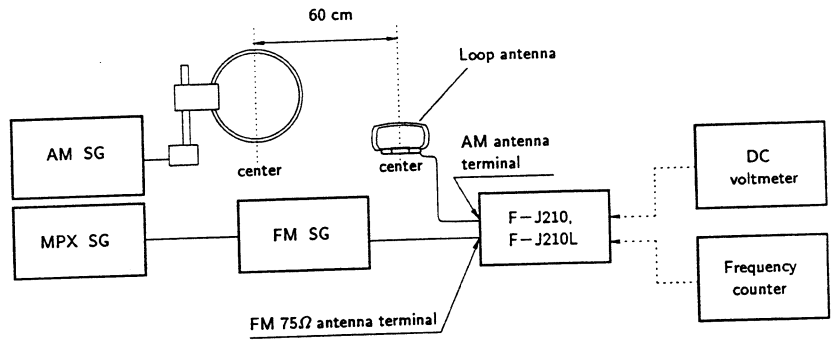


Fig. 4−1 AM and FM adjustment wiring diagram

**3 : ZEWZIX1K and ZEWZI types only*
**4 : ZDL type only*

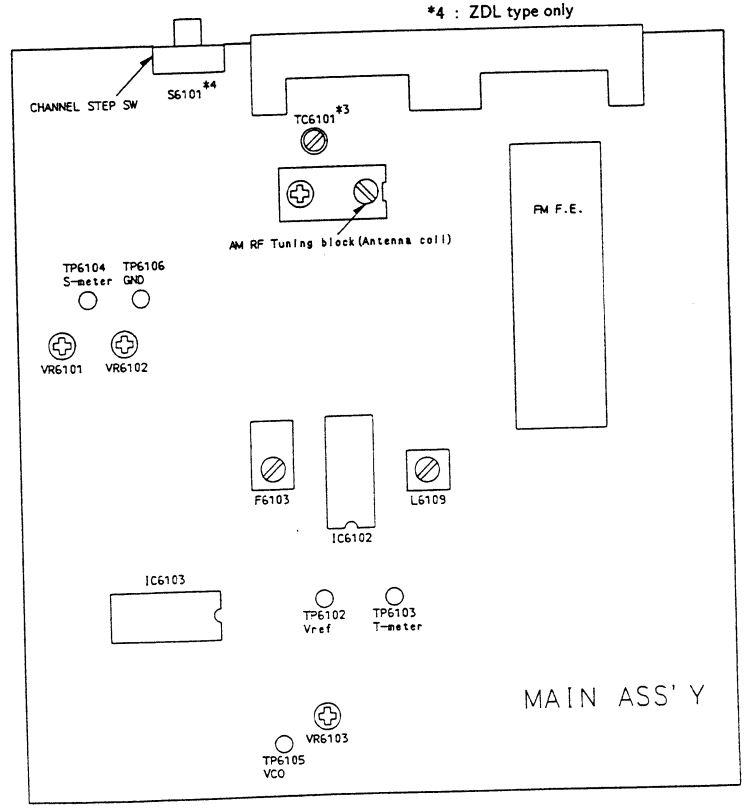


Fig. 4−2 Adjustment points

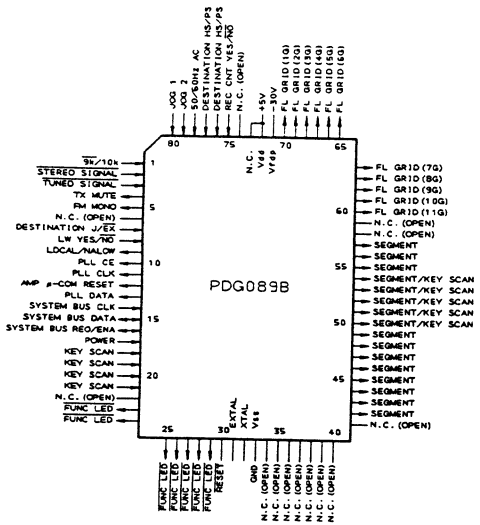
5. IC INFORMATION

- *The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.*

■ PDG089B (IC6901)

Tuner System Control Micro-computer

- Pin Assignment (Top View)



- Pin Function

No.	Name	I/O	Description	ACT
1	PE3	I	Switching Channel Step Frequency 9k / 10k Input	
2	PE4	I	$\overline{\text{STEREO}}$ Signal Input	L
3	PE5	I	$\overline{\text{TUNED}}$ Signal Input	L
4	PE6	O	TUNER MUTE Output	H
5	PE7	O	FM MONO Output	H
6	PB0	O	Not Used (OPEN)	
7	PB1	I	J / $\overline{\text{EX}}$ Input	
8	PB2	I	LW / $\overline{\text{No LW}}$ Input	H
9	PB3	O	LOCAL & NALOW Output	H
10	PB4	O	PLL CE Output (LM7001)	
11	PB5	O	PLL CLK Output (LM7001)	
12	PB6	O	AMP Micro-computer Reset Output	H
13	PB7	O	PLL DATA Output (LM7001)	
14	PC0	I	System bus CLK Input	
15	PC1	I/O	System bus DATA Input / Output	
16	PC2	O	System bus REQ Output	
		I	System bus ENABLE Input	
17	PC3	I	POWER IN ON / $\overline{\text{OFF}}$	H
18	PC4	I	Key Scan Input	
19	PC5	I		
20	PC6	I		
21	PC7	I		
22	PA0	O	Not Used (OPEN)	
23	PA1	O	Function LED $\overline{\text{ON}}$ / OFF	L
24	PA2	O		
25	PA3	O		
26	PA4	O		
27	PA5	O		
28	PA6	O		
29	PA7	O		
30	RST	I/O	RESET Input	L
31	EXTAL	I	Connected to ceramic resonator (8MHz).	
32	XTAL	O		
33	Vss	–	Connected to GND	
34	PD0	DP	Not Used (OPEN)	
35	PD1	DP		
36	PD2	DP		
37	PD3	DP		
38	PD4	DP	Not Used	
39	PD5	DP		
40	PD6	DP		
41	PD7	DP		
42	S8	DP	Segment Output	
43	S9	DP		
44	S10	DP		
45	S11	DP		
46	S12	DP		
47	S13	DP		
48	S14	DP		
49	S15	DP		
50	S16	DP	Segment Output / Key Scan Output	
51	S17	DP		
52	S18	DP		
53	S19	DP		
54	S20	DP		
55	S21	DP	Segment Output	
56	S22	DP		
57	S23	DP		
58	T12	DP	Not Used (OPEN)	
59	T11	DP		
60	T10	DP	FL Grid Output (11G)	
61	T9	DP	FL Grid Output (10G)	
62	T8	DP	FL Grid Output (9G)	
63	T7	DP	FL Grid Output (8G)	
64	T6	DP	FL Grid Output (7G)	
65	T5	DP	FL Grid Output (6G)	
66	T4	DP	FL Grid Output (5G)	
67	T3	DP	FL Grid Output (4G)	
68	T2	DP	FL Grid Output (3G)	
69	T1	DP	FL Grid Output (2G)	
70	T0	DP	FL Grid Output (1G)	
71	Vfdp	–	−30V FDP load power Input	
72	Vdd	–	+5V Power Suplly Input	
73	NC	–	Connected to Vdd.	
74	PG0	O	Not Used (OPEN)	
75	PG1	I	REC TIME COUNTER Yes / $\overline{\text{No}}$	H
76	PG2	I	Switching Model and Destination	
77	PG3	I		
78	PE0	I	AC Input	
79	PE1	I	JOG 2 Input	
80	PE2	I	JOG 1 Input	

NOTE :
I : CMOS Input
O : CMOS Output
N : Nch Open Drain Output
P : Pch Open Drain Output
UN : Nch Open Drain Output with Pull-up Resistor
DP : Pch Open Drain Output with Pull-down Resistor
UI : CMOS Input with Pull-up Resistor
DI : CMOS Input with Pull-down Resistor

6. FOR F – J210/ZEWZI, ZEBX1K, ZEB, ZDL, F – J210L/ZEBX1K AND ZEB

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

6.1 CONTRAST OF MISCELLANEOUS PARTS

F – J210/ZEWZI, ZEBX1K, ZEB, ZDL, F – J210L/ZEBX1K, ZEB and F – J210/ZEWZIX1K have the same construction except for the following:

Mark	Symbol & Description	Part No.							Remarks
		F – J210 /ZEWZIX1K	F – J210 /ZEWZI	F – J210 /ZEBX1K	F – J210 /ZEB	F – J210 /ZDL	F – J210L /ZEBX1K	F – J210L /ZEB	
◉	MAIN assembly	AWZ4959	AWZ4691	AWZ4957	AWZ4689	AWZ4692	AWZ4958	AWZ4690	
◉	DISPLAY assembly	AWZ4960	AWZ4717	AWZ4960	AWZ4717	AWZ4717	AWZ4960	AWZ4717	
NSP	Name label	AAL2000	AAL1999	AAL2001	AAL1998	AAL1997	AAL2003	AAL2002	
NSP	Antenna label	AAX1670	AAX1686	AAX1671	AAX1685	AAX1684	AAX1671	AAX1685	
NSP	T.label	AAX1690	.....	.....	.....	.....	.....	.....	
	Screw(STEEL)	ABA1047	ABA1047	.....	.....	ABA1047	.....	.....	
	FM antenna	ADH1002	ADH1002	ADH1008	ADH1008	ADH1008	ADH1008	ADH1008	
NSP	Spacer	.....	.....	AEC1236	AEC1236	.....	AEC1236	AEC1236	
	Side pad(L)	AHA1573	AHA1571	AHA1573	AHA1571	AHA1571	AHA1573	AHA1571	
	Side pad(R)	AHA1574	AHA1572	AHA1574	AHA1572	AHA1572	AHA1574	AHA1572	
	Packing case	AHD2459	AHD2497	AHD2459	AHD2497	AHD2457	AHD2460	AHD2458	
	Sheet	AHG1153	AHG1136	AHG1153	AHG1136	AHG1136	AHG1153	AHG1136	
	Front panel	AMB2100	AMB2100	AMB2100	AMB2100	AMB2100	AMB2099	AMB2099	
NSP	Chassis	ANA1176	ANA1107	ANA1176	ANA1107	ANA1107	ANA1176	ANA1107	
	Bonnet	ANE1424	ANE1423	ANE1401	ANE1401	ANE1400	ANE1402	ANE1401	
NSP	Earth plate	ANK1247	ANK1247	.....	.....	.....	.....	.....	

DISPLAY ASSEMBLY

AWZ4717 and AWZ4960 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		AWZ4960	AWZ4717	
	Q6901	DTC143ES	XDC143ES	
	D6901, D6903–D6905, D6907–D6910	1SS252	HSS104–02	
	S6801–S6812	ASG1029	ASG1034	

MAIN ASSEMBLY

AWZ4691, AWZ4957, AWZ4689, AWZ4692, AWZ4958, AWZ4690 and AWZ4959 have the same construction except for the following:

Mark	Symbol & Description	Part No. AWZ4959	AWZ4691	AWZ4957	AWZ4689	AWZ4692	AWZ4958	AWZ4690	Remarks
	Q6101	DTC124ES	XDC124ES	DTC124ES	XDC124ES	XDC124ES	DTC124ES	XDC124ES	
	Q6103, Q6104	DTA143ES	XDA143ES	DTA143ES	XDA143ES	XDA143ES	DTA143ES	XDA143ES	
	Q6105	.....	.....	.....	.....	.....	DTA143ES	XDA143ES	
	Q6106－Q6109	.....	.....	.....	.....	.....	DTC124ES	XDC124ES	
	Q6112	2SC2458	2SC2458	.....	.....	.....	.....	.....	
	D6101	1SV156	1SV156	.....	.....	.....	.....	.....	
	D6102, D6103	.....	.....	.....	.....	.....	1SS252	HSS104－02	
	D6104－D6108	1SS252	HSS104－02	1SS252	HSS104－02	HSS104－02	1SS252	HSS104－02	
	S6101	.....	.....	.....	.....	ASH1027	.....	.....	
	F6104	ATF1088	ATF1088	.....	.....	.....	.....	.....	
	L6101	LAU2R2K	LAU2R2K	.....	.....	.....	.....	.....	
	L6111	.....	.....	.....	.....	LAU010K	.....	.....	
	C6105	CKDYF102Z50	CKDYF102Z50	.....	.....	.....	.....	.....	
	C6106	CKPUYB101K50	CKPUYB101K50	.....	.....	.....	.....	.....	
	C6107	CKPUYB102K50	CKPUYB102K50	.....	.....	.....	.....	.....	
	C6108	CKPUYF103Z25	CKPUYF103Z50	.....	.....	.....	.....	.....	
	C6116	CKPUYF223Z25	CKPUYF223Z25	.....	.....	.....	.....	.....	
	C6118	.....	.....	.....	.....	.....	CKPUYF473Z16	CKPUYF473Z16	
	C6152	CKDYB122K50	CKDYB122K50	.....	.....	.....	.....	.....	
	C6153	CEAS2R2M50	CEAS2R2M50	.....	.....	.....	.....	.....	
	C6163, C6164	CKDYB102K50	CKDYB102K50	CKDYB122K50	CKDYB122K50	CKDYB122K50	CKDYB122K50	CKDYB122K50	
	C6167, C6168	CKDYB392K50	CKDYB392K50	CKDYB272K50	CKDYB272K50	CKDYB562K50	CKDYB272K50	CKDYB272K50	
	C6171	CCDCH101J50	CCDCH101J50	.....	.....	.....	.....	.....	
	C6174	.....	.....	.....	.....	CKDYX473M25	.....	.....	
	R6101	.....	.....	RD1/8PM103J	RD1/8PM103J	RD1/8PM103J	RD1/8PM103J	RD1/8PM103J	
	R6102	RD1/8PM152J	RD1/8PM152J	RD1/8PM472J	RD1/8PM472J	RD1/8PM472J	RD1/8PM472J	RD1/8PM472J	
	R6103	RD1/8PM153J	RD1/8PM153J	.....	.....	.....	.....	.....	
	R6104	RD1/8PM680J	RD1/8PM680J	.....	.....	.....	.....	.....	
	R6105	RD1/8PM561J	RD1/8PM561J	RD1/8PM331J	RD1/8PM331J	RD1/8PM331J	RD1/8PM331J	RD1/8PM331J	
	R6106	RD1/8PM221J	RD1/8PM221J	.....	.....	.....	.....	.....	
	R6114－R6116	.....	.....	.....	.....	.....	RD1/8PM103J	RD1/8PM103J	
	R6117, R6118	.....	.....	.....	.....	.....	RD1/8PM102J	RD1/8PM102J	
	R6141	RD1/8PM224J	RD1/8PM224J	.....	.....	.....	.....	.....	
	R6142	RD1/8PM473J	RD1/8PM473J	.....	.....	.....	.....	.....	
	R6143	RD1/8PM222J	RD1/8PM222J	.....	.....	.....	.....	.....	
	R6144	RD1/8PM122J	RD1/8PM122J	.....	.....	.....	.....	.....	
	R6145	RD1/8PM392J	RD1/8PM392J	.....	.....	.....	.....	.....	
	R6160, R6161	RD1/8PM682J	RD1/8PM682J	RD1/8PM242J	RD1/8PM242J	RD1/8PM242J	RD1/8PM242J	RD1/8PM242J	
	TC6101	ACM－018	ACM－018	.....	.....	.....	.....	.....	
	Antenna terminal(4P)	.....	.....	.....	.....	AKA1009	.....	.....	
	Antenna terminal(PAL 4P)	.....	.....	AKA1010	AKA1010	.....	AKA1010	AKA1010	
	Antenna terminal(PAL 2P)	AKA1012	AKA1012	.....	.....	.....	.....	.....	
	2 serial FE module assembly	.....	.....	AXQ1002	AXQ1002	AXQ1002	AXQ1002	AXQ1002	
	4 serial FE module assembly	AXQ1004	AXQ1004	.....	.....	.....	.....	.....	
	AM RF tuning block	AXX1027	AXX1027	AXX1025	AXX1025	AXX1025	AXX1026	AXX1026	

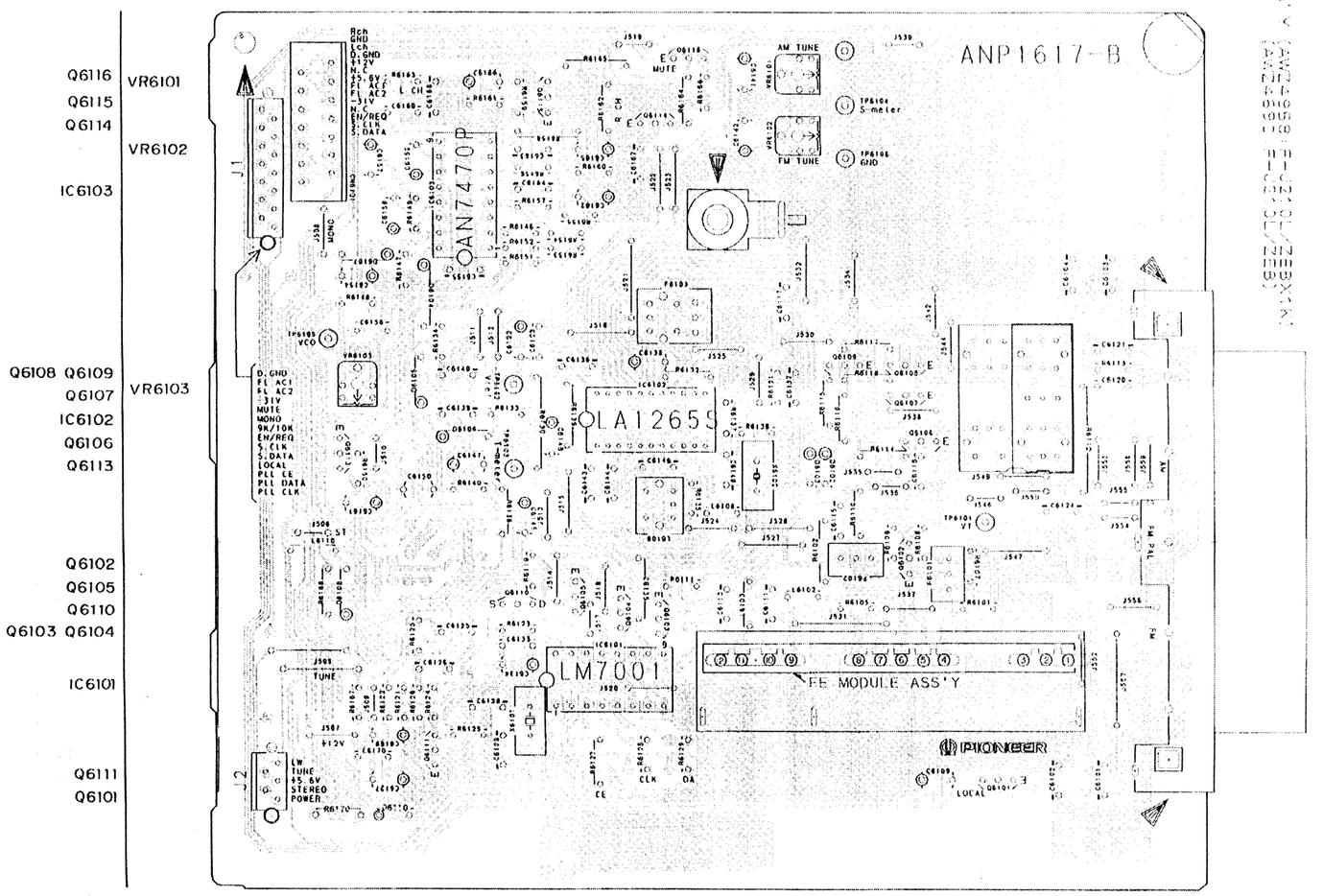
Note: 2 serial F.E. module assembly has no service part.

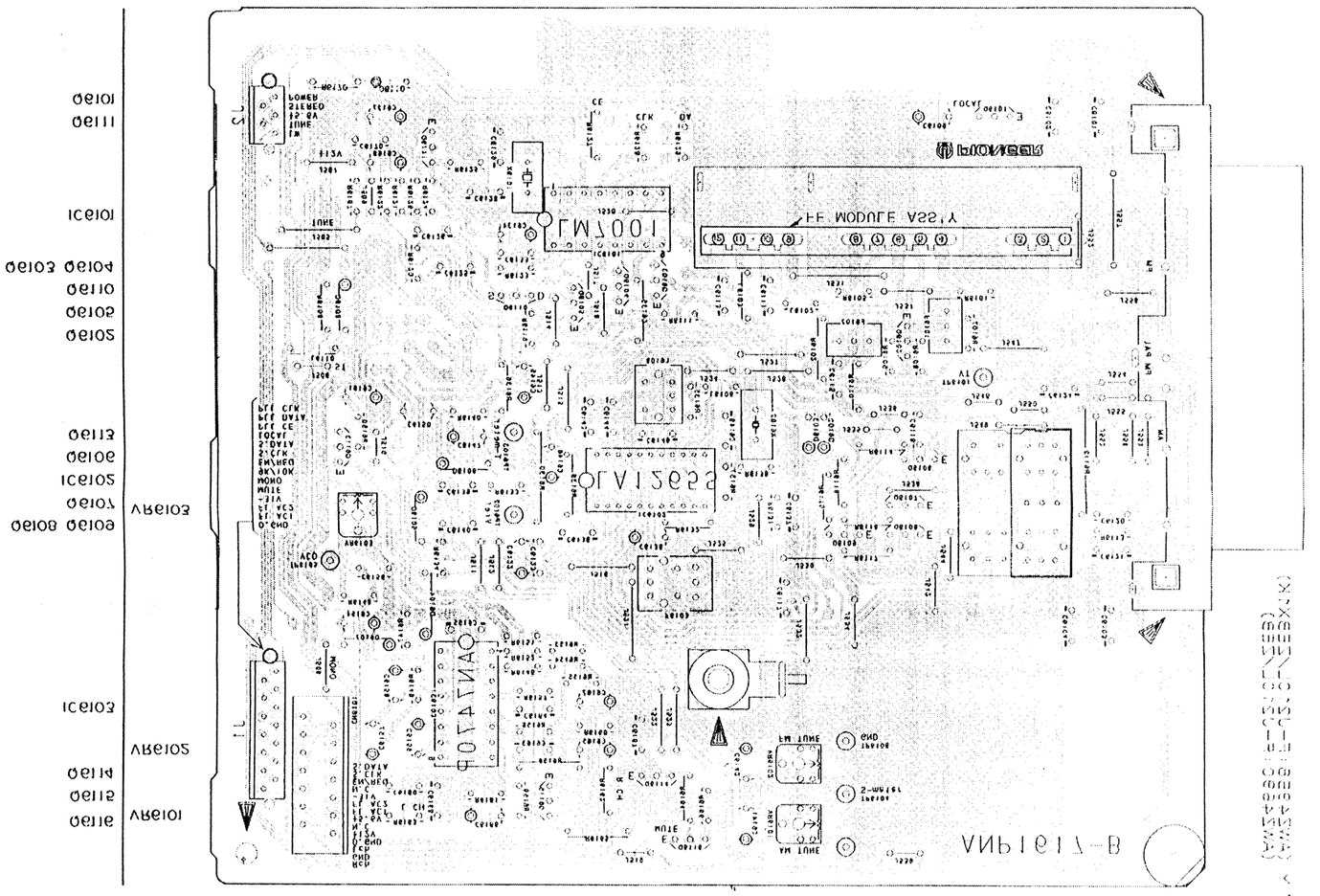
6.2 PCB PATTERN

● FOR F-J210L/ZEBX1K AND ZEB

MAIN ASS'Y (AWZ4658 F-J210L/ZEBX1K)
(AWZ4659 F-J210L/ZEB)

This P.C.B. connection diagram is viewed from the parts mounted side.





This P.C.B. connection diagram is viewed from the foil side.

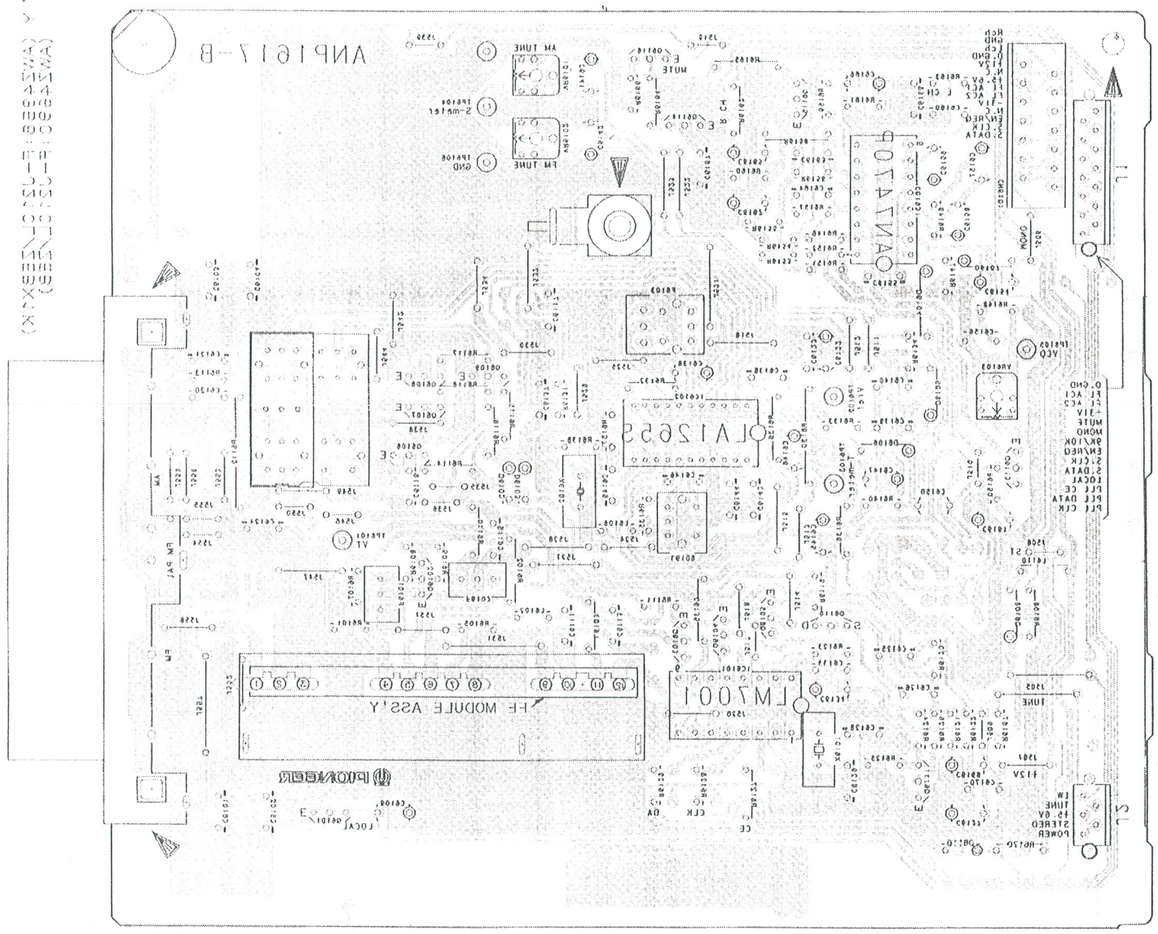
MAIN ASS'Y (AWZ4658 F-J210L/ZEBX1K)
(AWZ4659 F-J210L/ZEB)

6.2 PCB PATTERN

- FOR F-J210L/ZEBX1K AND ZE8

A MAIN ASS'Y (AWZ4958:F-J210L/ZEBX1K)
(AWZ4960:F-J210L/ZE8)

This P.C.B. connection diagram is viewed from the parts mounted side.

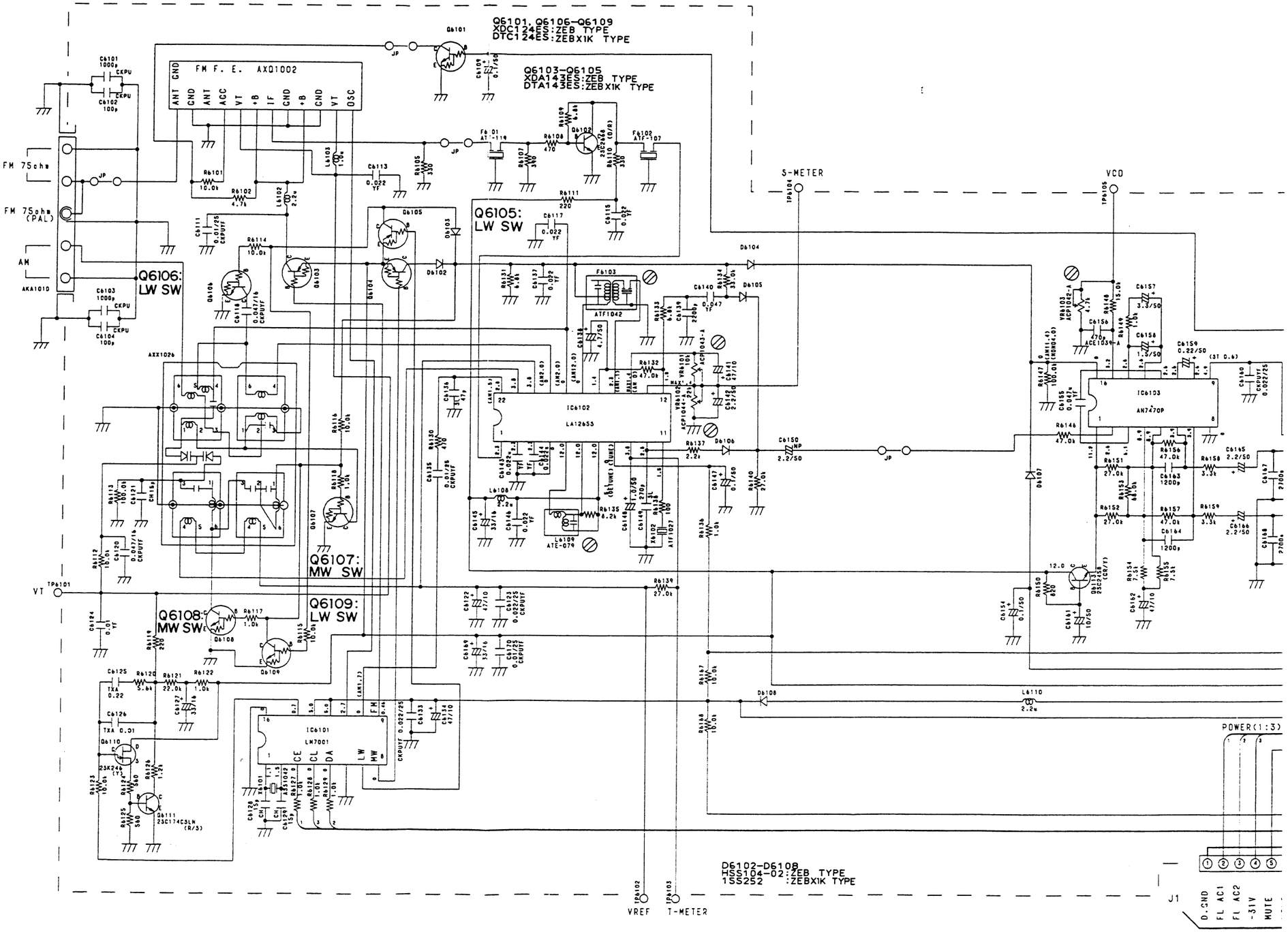


This P.C.B. connection diagram is viewed from the foil side.

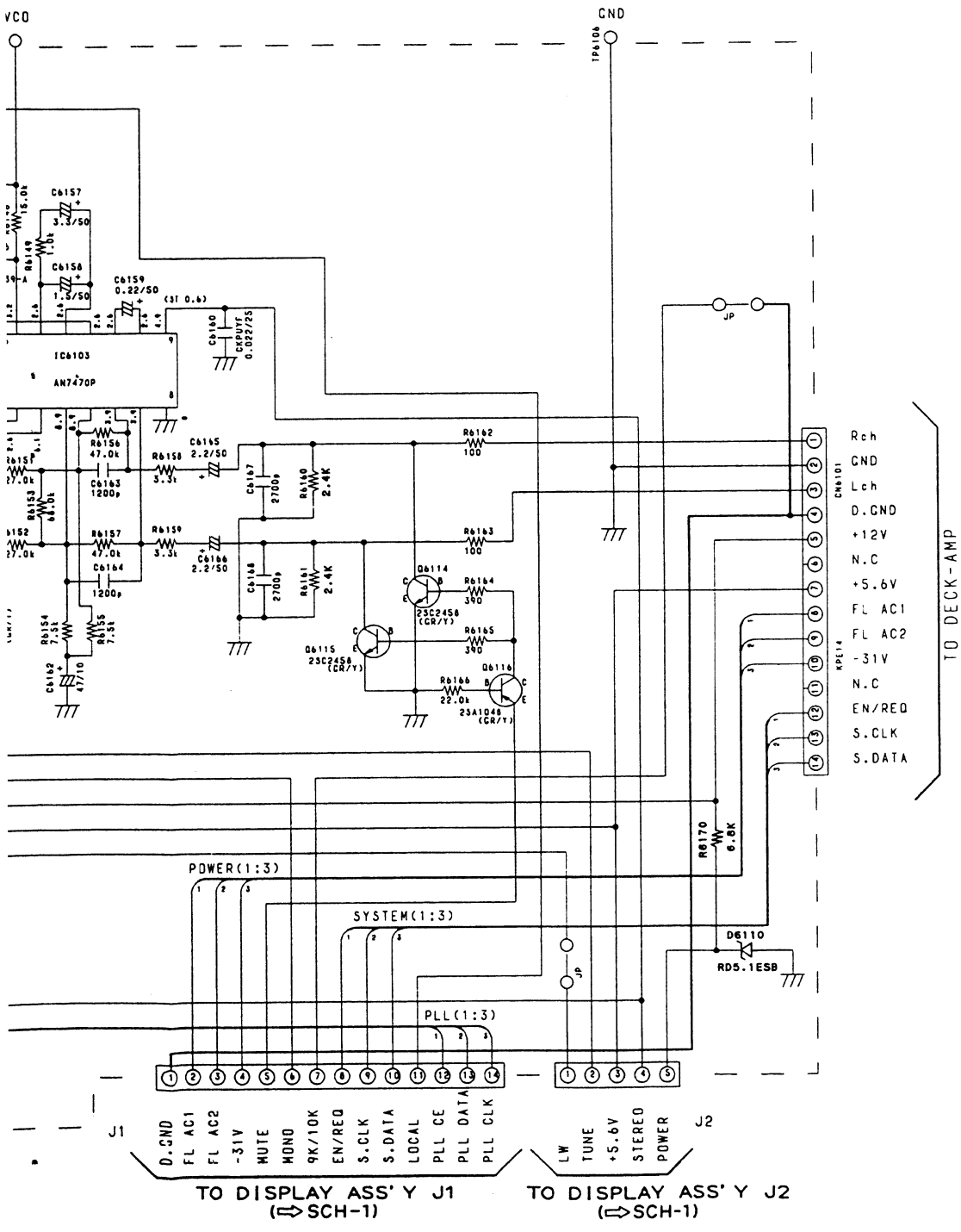
6.3 SCHEMATIC DIAGRAM

● FOR F−J210L/ZEBX1K AND ZEB

MAIN ASS'Y (AWZ4958 : F−J210L/ZEBX1K)
(AWZ4690 : F−J210L/ZEB)

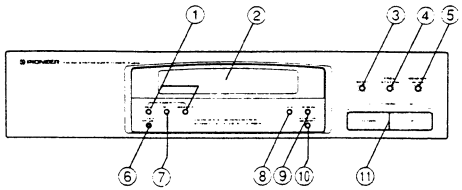


SCH-3 MAIN ASS'Y



MAIN ASS'Y **SCH-3**

7. PANEL FACILITIES

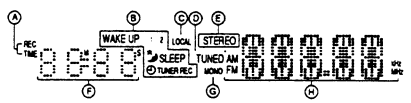


① TIMER selector buttons

[REC]
Used for setting timer recording .
[WAKE-UP]
Used for setting timer playback. Each time this button is pressed, WAKE-UP 1 or WAKE-UP 2 is selected alternately.

② Display section

Shows current time, received frequency, contents of timer settings, etc.



Ⓐ Deck II REC TIME indicator
Lights when deck II is recording.

Ⓑ Timer indicators
SLEEP :Lights when the SLEEP timer is set.
WAKE-UP 1, 2 :Lights when WAKE-UP 1 or 2 is set.
REC :Lights when the timer recording is set.
TIMER :Lights up during timer recording operation.

Ⓒ LOCAL indicator
Lights when the LOCAL button is set to ON.

Ⓓ TUNED indicator
Lights when a broadcast is received and tuned in well.

Ⓔ STEREO indicator
Lights when an FM stereo broadcast is received (FM MONO button set to OFF).

Ⓕ Time display
This shows the present time and during recording, it shows the elapsed recording time. Once STATION (broadcasting station) has been called, the STATION CALL number will always be displayed regardless of the listening sources. The time will be displayed in the standby mode and when the timer has been set.

Ⓖ MONO indicator
Lights when the FM MONO button is set to ON. When this indicator is lit, FM stereo broadcasts are reproduced monaurally.

Ⓗ Frequency display
Shows received broadcast frequency. Also gives scrolling display of main function status.
FM and MHz light : FM reception
AM and kHz light : MW or LW reception

NOTE:
The elapsed recording time might not be displayed due to noise from the power supply caused by improper timing of connecting the power cord. In such a case, disconnect the power cord and connect it again.

③ BAND selector button

Each time this button is pressed, FM or AM (MW or LW) reception is selected alternately. .

④ FREQ./STATION button

Use to select the display mode (frequency mode or station mode).
[Frequency mode]
Display indicates the frequency of the tuned station, and the current time.
[Station mode]
Display indicates the frequency of the tuned station together with the recorded station number assigned to that station.

⑤ MEMORY SCAN button

Used for scanning memoriged stations.

⑥ CLOCK ADJUST button

Used for starting the clock adjustment.

⑦ SET button

Used for current time, timer playback, and timer recording setting.

⑧ LOCAL button

Use this if the broadcast signal is too strong, causing noise and distortion. The attenuator reduces the strength of the signal, reducing noise and distortion.

⑨ FM MONO button

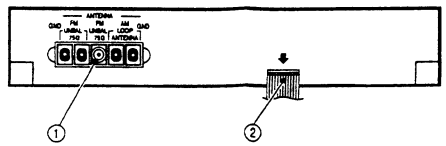
Turn on when there is much noise during reception of FM stereo broadcasts. The reproduced sound will become monaural but noise will be reduced.

⑩ STATION MEMORY button

Used for memorizing stations.

⑪ TUNING – (DOWN) / + (UP) button

[During tuning]
Used for locating stations.
Use "–" button for lower, and "+" button for higher station number or frequencies.
[During time and timer setting]
Used for adjusting the clock, timer setting and its related adjustments.



① FM/AM ANTENNA terminals

Antennas must be connected to these terminals: otherwise you will not be able to receive stations.

② TUNER flat cable

Connect to the TUNER jack of the CD cassette deck amplifier.

8. SPECIFICATIONS

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	Mono: 12.8 dBf, IHF (1.2 µV/75Ω)
Sensitivity (DIN)	Mono S/N 26 dB: 1 µV/75Ω
	Stereo S/N 46 dB: 35 µV/75Ω
Signal-to-Noise Ratio (IHF, 85 dBf Input)	Mono: 77 dB
Signal-to-Noise Ratio (DIN)	Mono: 66 dB
	Stereo: 60 dB
Distortion	Stereo: 0.5% (1 kHz)
Antenna Input	75Ω unbalanced

MW (AM) Tuner Section

Frequency Range	531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna)	350 µV/m
Antenna	Loop Antenna

LW (AM) Tuner Section (F-J210L only)

Frequency Range	153 kHz to 281 kHz
Sensitivity (IHF, Loop antenna)	1,500 µV/m
Antenna	Loop Antenna

Miscellaneous

Dimensions	360 (W) x 80 (H) x 324 (D) mm
Weight (without package)	2.2 kg

Furnished Parts

FM Antenna	1
AM Loop Antenna	1